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Lattice Modulation in the Long Period Ordered Alloys Studied by X-Ray Diffraction. III. $Cu_3Pd(\alpha'')$*

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Abstract

Periodic atom displacements in the long period ordered alloy $Cu_3Pd(\alpha'')$ with the one-dimensional anti-phase domain structure have been investigated by X-ray diffraction using an alloy single crystal. It has resulted from the crystal structure analysis, that in $Cu_3Pd(\alpha'')$ the heavier atoms (palladium) are displaced toward the anti-phase boundary and the lighter atoms (copper) away from it, giving rise to puckered planes. These behaviors are different from those of Au_3Cd and CuAuII in which the heavier atoms are displaced away from the boundary and the lighter atoms toward it. Thus, the atom displacements are affected by the kind of alloys. A little disordering is present in atomic sites in the mixed plane facing the boundary.

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